

VHFER

HAM

ELECTRONICS

INFORMATION

LEARN

BY DOING

Vol. 3, No. 3

March, 1965

OSCAR 3 RESULTS

VHFER magazine is published monthly by Parks Electronics Laboratory, Route 2, Beaverton, Oregon. Please make subscription checks payable to the company, not VHFER magazine. Advertising of interest to VHF hams is solicited.

20¢ per copy

1 year \$2.00

Foreign \$3.00

VHF MAN'S JOURNAL....FURTHERMENT OF THE ART....KNOWLEDGE

VHFER---A SLIGHT CHANGE IN DIRECTION

Loren Parks, K7AAD

This is the first issue of VHFER in which Doug DeMaw has not been a major contributor. Doug has gone on to greener pastures, namely QST. We wish him the best and think he will do them a fine job. He is dedicated to amateur radio and his wealth of constructional experience in VHF will surely be missed by VHFER readers, many of whom have built the rigs he described---and found they worked like he said.

But now we have a problem. I can't fill Doug's shoes. Yes, I've built VHF gear since 1939 when I got my ticket--and even a bit before. But recently my construction has been very limited and confined mostly to high power finals, antennas and associated measuring equipment, phase-lock systems and numerous other gadgets I've built trying to ferret out weak signals from the noise. Many readers of VHFER couldn't care less about that sort of thing and I know it. How well we can continue to satisfy their needs remains to be seen. So there will be a slightly different direction--not because I disagreed with the previous direction (which I did not)--but because my time is limited and my background is different.

There are two or three areas that I believe VHFER can serve, and I have made attempts at one of those areas in the past--namely measurement. Things such as measuring r.f. power output, efficiency, line losses, unwanted radiation, antenna patterns and gain. Not more than one VHF ham in 500 is very competent in this region. Another area is communication. And by this I mean we need a publication subscribed to by the best of the VHF men--in the U.S. and abroad. A magazine which can publish technical articles which are quite specialized is of necessity small. VHFER really meets that qualification. If nothing else it is small. How can those of us on the west coast locate competent hams in the midwest for scatter skeds, moon-bounce or Oscar? Maybe in other areas its different, but the west coast is really isolated VHF wise. How can moon bounce efforts be coordinated so that all who want to listen in on attempted contacts can do so? Have you ever listened for a moon bounce signal on two meters? Why not? Maybe you didn't know when and where to listen. We're taking care of that shortly with W6DNG's help. Did you work thru Oscar? Why not? Didn't know it was up? Or maybe you got caught with your antenna down. How did others do? What techniques worked best? Who got results? Did you know that W3SDZ in Pennsylvania was S9 plus in Seattle on two meters? The point of this rambling is to show that we do have a communications problem. Sure a lot of it gets in QST and the other magazines but only two months late.

So after this issue we are going to substitute SKEDS WANTED for Want Ads. No more free want ads. But if you want skeds and solicit them thru VHFER it will be necessary for you to state your transmitter power and antenna. Too many times in the past the hams soliciting skeds were just guys with gooney birds looking for another state... or they were hopelessly incompetent operators or undependable. I hope to screen those kind out of the sked box. If you have good equipment, know what you're doing and want to try to work over a difficult path, the sked box is for you. No charge.

West coast scatter and dx enthusiasts have a net every Sunday at 9 pm PST (daylight time soon) which is on lower sideband between 3810 and 3820. The QRM is often terrific, but east coast hams sometimes come in nicely. Participants are W6NLZ, W6GDO, K7CAZ, K7AAD, WA6MGZ, K6HCP, K6KV and a few others. All are 6, 2 or 432 DX hounds. They discuss results of the previous week's skeds and set up new ones. 50MC scatter stations outside the coastal states are badly needed, so if you qualify, please write or join in the net.

VHFER needs help--namely articles or someone to feed us well-screened VHF operating news from other sections of the country. If you think I enjoy constantly reading my own words in print you're mistaken. Its even more disagreeable to me than it is to you. No matter how you look at it, writing is a pain in the neck. But if you have something to contribute that is worth while but are unaccustomed to writing, I will edit or re-write it if you request. Make diagrams clear, not fancy. I will photographically reduce them to size to fit the page. If VHFER is to continue, it will have to have help. Money is not the problem. Content is.

MOONBOUNCE AUDIO FILTER
by
Victor A. Michael, W3SDZ

When we start to buy db for a moonbounce effort at 432 and 1296, we usually face the expenditure of sizable sums for large antenna arrays, exotic tubes for final amplifiers and parametric front ends. ALL of these are important to a moonbounce effort. Presented here is a method of gaining another ten db of S/N Ratio if your present receiver bandwidth exceeds 500 cycles ---- the cost ---- \$2.50 ----one hour labor to assemble--many hours of practice to use.

Before we go further, let me say that the filter described has allowed me to hear weak C W signals that were not detectable in the noise of the 500 cycle passband of my 75A4. It is the filter presently in use at W1BU for moonbounce tests. It was originally designed by Hank Cross, W100P. I tried several schemes before this to improve my ability to HEAR weak signals. All other attempts produced encouraging results on measuring equipment, but when put to the test of hearing signals left much to be desired.

My first hint that this was something workable came when I nulled out a weak cw signal on the low end of six meters by turning my antenna into a null. The filter was switched in -- some careful tuning -- and there was the signal. The filter was switched out and there was no signal. This was repeated several times with equal results. During our moonbounce tests on 432 using a 256 element colinear antenna, the filter made the difference between hearing and not hearing our own echoes. (The new 27 ft dish should make things a little better this summer).

The circuit in figure one is rather simple, but values can be changed slightly to get the exact passband you want at the frequency your ear hears best. While the filter we use for moonbounce work is 65 cycles wide, the 100 cycle model works just as well and is a little easier to use. The exact values of C1 and C2 are not too important (will vary center frequency slightly) they should be matched as closely as possible. A capacitor bridge will be a help, but we have duplicated this circuit many times without matching capacitors ---maximum bandwidth ever obtained was 120 cycles at the 3db point.

Actually building the filter is the easiest part --- learning what to listen for and how to tune is the part that requires patience and practice. The ear can detect frequency changes fairly well, but it falls down in the detection of amplitude changes. Remember, the best the ear can detect is a 3db amplitude change. When we attempt to hear a signal three to six db out of the noise in a 65 cycle filter, we have to do some ear training. The signal is going to sound something like a very weak aurora signal against a background of a steady roar of noise the same pitch. As described in Fig. 3, you will note an audio voltmeter across the output. This becomes a great aid to tuning in the weak signal and training your ear to hear the signal. The only requirement of the voltmeter is that it be damped.

A note on how to set up the receiver might be in order at this point. Set the receiver to the narrowest passband possible, then cut in the filter. Now, vary the BFO tuning or Passband tuning, watching the noise output on the audio voltmeter, peak for maximum reading. When using a fixed frequency audio filter such as this, you have no choice as to the pitch of signal you can listen to.

Actual tuning of the receiver now enters the picture, and here is where we find we have opened a "Pandora's Box". Tuning rate must be slow! My 75A4 with gear reduction knob tunes 25KC per revolution -- this is 25,000 cycles for one turn of the knob, and we want to center a weak signal in a 65 cycle passband. It is possible to do, but extremely difficult. Some solutions to consider --- VXO one of the heterodyning oscillators in your receiver. At W1BU, Sam uses a VXO that tunes 3KC in 500 divisions with ten turns of the dial. Thus the main receiver dial can be used to set the receiver to the region reception is expected, and the VXO is then used as a fine tuning control.

Other requirements are also necessary --- the receiver just can't drift, the signal you're listening to must be stable--- but we've opened the lid of Pandora's box much too wide now. I should have described only the filter, told you how cheap it is to build and what wonderful results can be had, but but there has been a little too much of this going on, i.e. articles on synchronous reception. If you have need for a few critical db in a propagation experiment and are willing to use slow speed cw, here is a workable scheme that may be of some help to you.

Editor's Note: The 88 mh. toroidal coils sell for about 75¢ each plus postage. They have been advertised in the ham magazines for years. Meshna in Mass. and J.J. Glass in Calif. are two dealers who advertise them. Most, if not all the coils are tapped, whether the ad says so or not. If you want to be sure, you can get two tapped ones from Deane Kidd, W7TYR, 12235 S.W. James, Tigard, Ore. for \$1.60 postpaid, cash, check or stamps. He will buy from a dealer in Calif. and re-ship as a service to VHFer readers.

There are actually two coils on the toroid and they must be connected in series to provide a total inductance of 88 mh. Two wires come out at each of two places. Connect the two wires coming out one side together, for the center tap. The ends of the coil then are the other two wires coming out the other side.

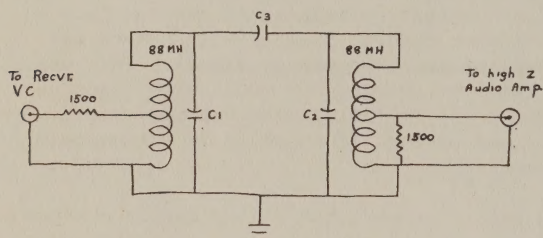
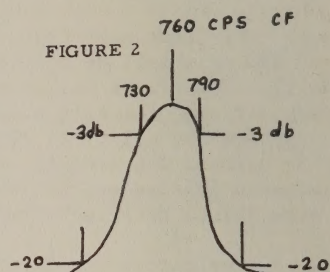


FIG. 1



VALUES FOR SHARP FILTER

C1 & C2 ---- .57 mfd. (.47 & .1 in parallel.
C3 ---- .033 mfd.

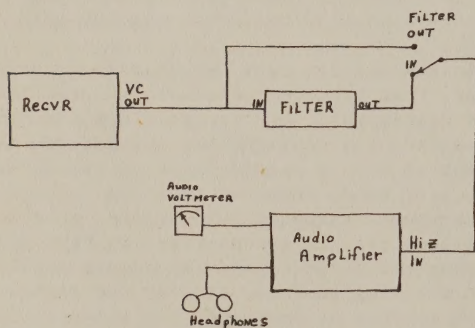
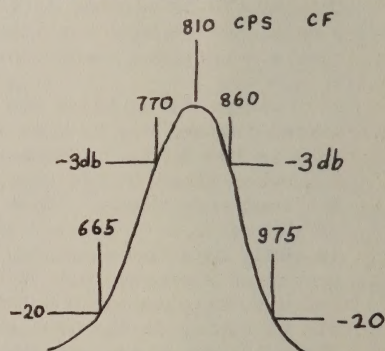


Fig. 3



VALUES FOR 100 CYCLE FILTER

C1 & C2 0--- .47 mfd.
C3 ---- .047 mfd.

WESTERN STATES VHF QSO PARTY SKEDS WANTED. The Tektronix ARC will again be on 8,000 ft. Paulina peak in central Oregon with better gear and antennas for 50 thru 432 Mc. Possibly gear for 1296, 3 g.c and 10 Gc. Wrkd into San Francisco area on 2 last time. Want especially to hear from hams with gud gear in Washington, British Columbia, Idaho, Nevada, Utah and Calif. Write E.P. Single, c/o Tektronix, Box 500, Beaverton, Ore.

SCATTER SIGNAL LISTENERS WANTED

Look for vox-controlled SSB CQ recording on 50.115 Mc. at 0130-0200 GMT (1930-2000 CST) April 7-30, daily. Beam heading east. Wud appreciate heard reports. Also want 50 Mc. CW or SSB scatter skeds anywhere. Write K7CAZ, C. Mike Lamb, 21404 29th Ave. So., Seattle, Wash. 98188.

OSCAR III RESULTS
Loren Parks, K7AAD

Oscar III has had a short but glorious career. It went up about March 9 and the repeater went out about March 23. As of March 30, the beacon can still be heard on 145.85. It says HI and BRRR. This beacon sends information about conditions in and around the satellite. Details on how to interpret the telemetry are given in the March QST. The beacon was still loud and clear, about S7 on the pass I heard. I stood in my shack (on the ground) and waved a dipole in the air to note polarization shifts. It was in about 12 minutes. Those of us who did not participate missed a lot. I am one of them. I'll be ready next time, and so will a lot of the rest of you. Can't say we weren't warned ahead of time. QST and the Oscar project did their part.

Many areas no doubt have not yet heard that OSCAR was up and that two meter DX was to be had. With the cooperation of WB6KAP (Victor Frank), W6GDO (Jay O'Brien), and W7UAB (Tom Curran), I have assembled data and impressions I hope will be of interest to you. I may have a few things balled up and there are differences of opinion, but I think its a lot better than nothing so here goes.

OSCAR III was a repeater--it took in signals in one part of the 2 meter band and re-broadcast them on another part. When the satellite was in the proper orbit, it was capable of repeating 2 meter signals from most, if not all, the U.S. during a pass. West coast stations were working locals (thru the satellite), midwest stations and east coast. East coast stations were working Europe so I hear. Lots more stations were heard than worked, that's for sure.

The problems consisted of deep fading (except for those with circularly polarized antennas), the QRM was at time like 20 meters, stations tended to be bunched in the lower 25 kc. of the repeater output, and there was a rather short time to make a contact, depending on what part of the country OSCAR was going over. Passes were 4 to 18 minutes long and were repeated every 103 1/2 minutes with a shift in the location of the satellite.

A tiltable antenna was a very valuable asset. W6GDO says that a fixed tilt of about 10 degrees was a lot better than being horizontal. On overhead passes a dipole did a very creditable job. High power was a definite asset. All the hams I know who were successful were running 500 to 1000 watts. But since a dipole worked for GDO on overhead passes it is safe to assume a properly aimed Yagi of a few elements (and properly tuned) would work with powers of a couple hundred watts or maybe less. W7UAB used two operators. One receiver listened for the beacon and kept the antenna aimed for maximum signal, while the other used a separate receiver and operated the rig. Even then the failure rate was high for unknown reasons. Code speed was 12 to 18 wpm. Some SSB signals were heard and probably could have been worked. No AM got through as far as I know.

In the tabulations below, one is meant to show the variety of signals heard on a specific pass. The other shows how well each call area was represented. Really, it shows there weren't too many stations capable of doing the job. The same calls appear again and again. Incidentally, there was a marked improvement in the 2 meter preamp sales.

(continued next page)

VHFER TO REPLACE 6 UP

It has seemed to me in the past that I went to an awful lot of work preparing copy for only 500 subscribers. I think other potential contributors felt that way too. When I was in Boston in February, Wayne Green announced that 6 UP was not soliciting new subscriptions and that they planned to cease publication the end of the year. The number of people interested in VHF just wasn't enough and there were some other considerations. At any rate it was not a profitable venture and it was a lot of work. That I wouldn't argue from my experience. At any rate, it is just as difficult to set up for 500 as for a few thousand--outside of the mailing and handling. The articles and printing are all the same, obviously. So I called Wayne and asked what he thought about my taking over his subscription list. He thought it was a fine idea, but warned me about what I was getting into and advised against it. Anyway, I thought I'd give it a fling and see what happens. It will cost me heavily for a while and I'll have to solicit advertising and articles. Frankly, I'm scared. So the April issue will have a circulation of about 3,000 to 3,500. Postage alone will be over \$120, I'm saving two articles that were to have gone into this issue for the next one. Bear with me, again.

Stations heard by WB6KAP via Oscar III. San Francisco bay area.

PASS

- 8 K6SDZ, W6DEE, W4BUZ
- 9 W6GDO, K9AWP, WØIC
- 13 K9AAJ (Ill.)
- 35 W6NLZ, K2GUG (N.Y.), W8NAH,
W3BYF, K5TQP, K2LMG, WØIC
K4QIF (N.C.)
- 36 K6NII, W6GDO (Sacramento)
- 49 W9ZIH, W6DEE, W8KAY (calling K2IEJ)
WØLER, K4MHS, W4BUZ, K5MBV
- 50 K5WXZ (Texas)
- 55 WA6MGZ (local) K6HMS (So. Calif.)
Wb6JZY (local) W4WNH, K4IXC
- 56 WA6MGZ, W7LHL (Seattle)
- 63 W9WND, K9AAJ, K5WXZ
- 64 KH6DEM, K7NII, K6HCP, WB6JZY
WA6MGZ, KL7CUH

Only non-Calif. listings after this

- 65 KL7CUH
- 69 W9ZIH, W5JWL
- 77 K7DZG, K5WXZ, W8YIO, K9AAJ,
W8NSH, K2GUG, W4BUZ
- 78 W7UAB (Portland)
- 82 K9AAJ
- 90 K2GUG, K4MHS, K2MWA/, W1JSM
- 91 W5UKQ, W4WNH, WØEOZ
- 146 K9CHU, W4WNH, W7UAB, W2AMJ
- 159 W4HJQ, K3KEO, W9TGB, K2GUG
W1BU (Mass.) W2AMJ, WA2YXS
- 160 K5WXZ, W6KEV, W7UAB, K9AAJ
W3SDZ (calling W6GDO)
- 161 W2UK/KH6
- 173 K4MHS, K5TQP, W7LHL, W1BU
W2AMJ, W9TGB
- 174 K5WXZ, W7UAB
- 179 WØTMO, W4WNH, W4AWS, WØIC
- 187 K5WXZ, K4YYJ, W7JRG (Mont.)
K1LSY
- 188 K5WXZ
- 189 VE6NT, VE7NI

Stations heard by W7UAB via Oscar III.

Portland, Oregon

Arranged by call areas only.

34 different calls of a total of 85 heard.

K2GUG, K2KJN, W2AMJ, WA2WEB, W2LVQ

K3KEO

K4MHS, K4QIF

K5WXZ, K5TQP, K5WXZ, W5JWL

WB6JZY, WA6MGZ, W6MSG, W6UKQ, K6TSK,

W6GDO, WA6RLW, W6TYM, W6UXN, WA6KLL,

W6KEV, WB6KAP

K7DZG, K7ICW (Nevada), W7LHL (Wash.) W7JRG

W8NSH

K9AAJ, W9TGB

KØQIF

KL7CUH, VE3BQN

"by far the best I have ever used!"

...that's what they say
about the

"J" Beam Antenna

1. ADD-A-UNIT MODULAR CONSTRUCTION

2. CONSTANT IMPEDANCE AND IMPROVED RECEPTION

3. BEAM COMPRESSION AND ELIMINATION OF
SIDE LOBES

4. PRETUNING AND POLARIZATION

5. LIFETIME DURABILITY

NEW QTH

27 E. 112th Place
Chicago, Illinois

Bill Roberts says,
"LET ME OPEN THE
DOOR TO VHF/UHF
DX for you with
J-BEAMS and SKY
BEAMS!"

GAIN INC.

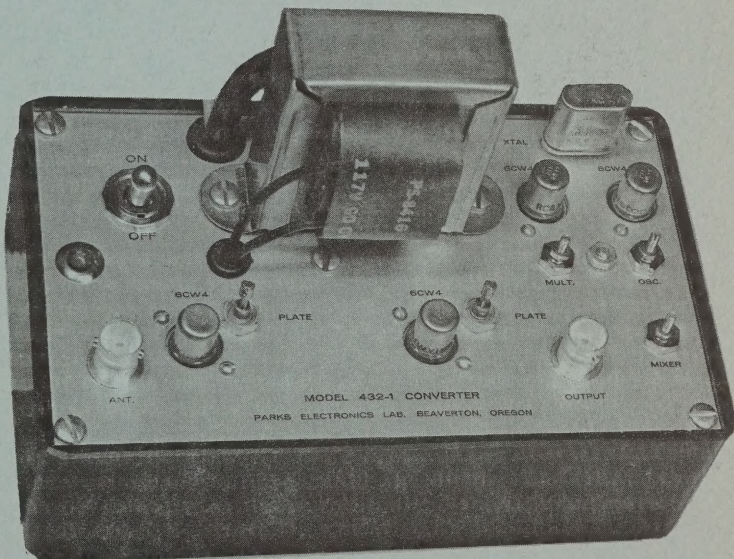
MOONBOUNCE...SCATTER...TROPO...GROUND WAVE
Yours for the asking with GAIN, INC. Write
today for free specs and prices. (W9HOV)

MODEL 432-1

\$54.95 POSTPAID

Noise figure: 6 d.b. or less
F. at 26, 28, 30.5 or 50 Mc

Write for literature to
Parks Electronics
Route 2, Box 35
Beaverton, Oregon



All our equipment has a self-contained power supply.

2 meter converters with I.F.s from 7 to 50 Mc.
6 meter converters with I.F.s from 7 to 30.5 Mc.
Preamps for 144, 220 and 432 Mc.

WANT ADS

Sell P & H Electronics 6M Transverter, Model 600A. \$25. Power supply, PR600A, \$25. Both for \$45.00. Want Comaire 2 & 6 meter "Matchbox." H.P. Leary, K7ZOK 1512 N. Saylor, Las Vegas, Nevada.

6 meter nuvistORIZED Ameco Converter, 10 meter output. Pair 4E27s, sockets and copy CQ 1951. For quick and easy high powered 6 meter rig. Also BC 696. Want surplus A.M. receiver or ????. Roy Crocker, W3AVV 38 N. Church St. Carbon-dale, Penna.

WANTED TO BUY--Back issues of VHFER. All of volume 1 needed. Write W4ID 461 3rd Ave., Sea Park, Eau Gallie, Florida

WANT one used 4-400A in gud condx. Please send price quote.

FOR SALE DX-35, vy gud cw and fine a.m. modulation \$32. Ken Feldman, 705 Gayley Ave., Los Angeles 24, Calif.

FOR SALE (no junk): Ameco 144W 2 meter converter, \$35. Ameco 1W pwr supply, \$8. Clegg 99er, \$110. Clegg 22er (new), \$235. Dow coax relay, \$7. CDR AR-22, \$22 Single ring halo, (6Mtrs), \$7. EV 664 cardioid mike (new) \$35. In-verter, AC to DC, 25 v., \$25. VFO for 99r, \$20. Bill Autry, 13543 Poplar, Southgate, Mich.

NOTE: Want ads for equipment are being discontinued.



Published by
Parks Electronics Lab.
Route 2, Box 35
Beaverton, Oregon 97005